

Vegetated Buffers Protect Our Quality of Life, Environmental Health, And A Vibrant Economy

Presentation for the Sussex County Council, February 22, 2022

Chip Smith

- 40+ yrs experience, 20 working for USACE & 20 Overseeing USACE with Assistant Sec of the Army for Civil Works (Pentagon)

- Expert on Rivers & Harbors and Clean Water Acts permitting, river and wetland protection, buffer preservation, and habitat restoration

- Reviewed and recommended approval of over over 600 water resources project reports and NEPA documents

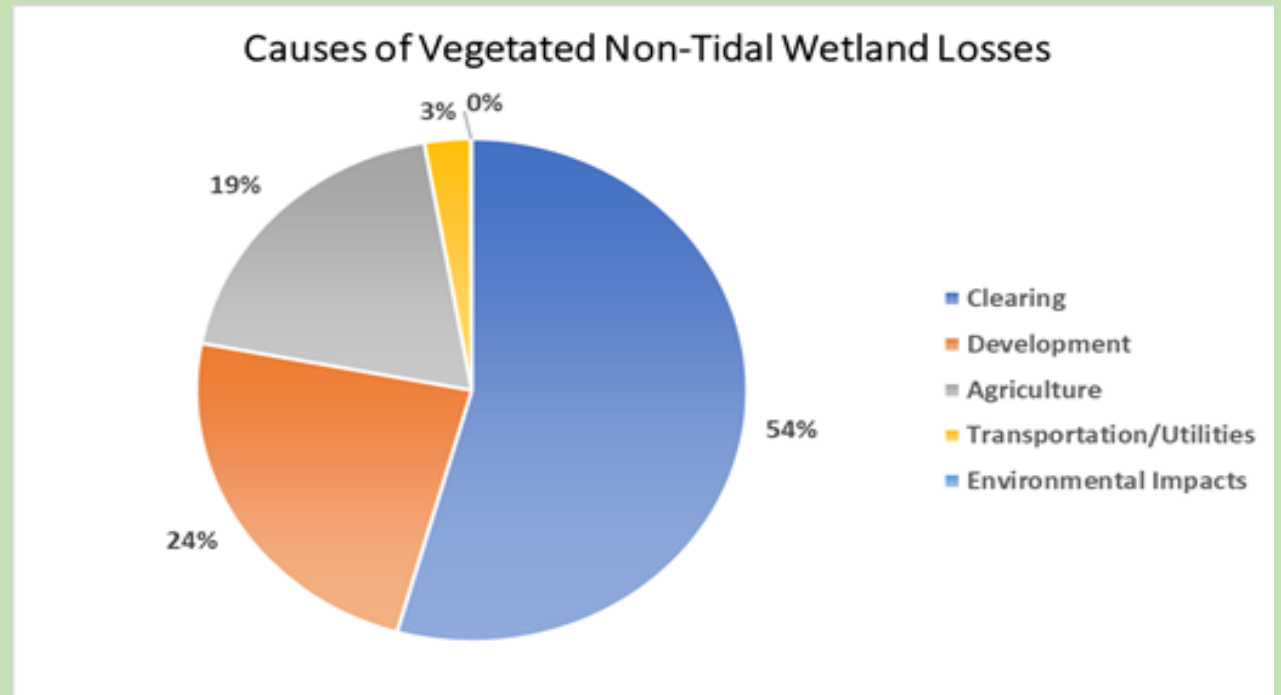
- Participated in development of environmental and permitting regulations and policy guidance for Army Civil Works/Corps Regulatory Program

- Taught environmental restoration and mitigation, including the design and importance of vegetated buffers

Bethany Beach Landowners Association Board



1935 Topo Map – Much Less Development & Chart of Wetland Losses



Wetlands and Wetland Buffers

- Improve water quality by filtering nutrients/sediment, absorbing harmful substances
- Support species biodiversity
- Protect the coast and communities by storing floodwaters, buffer the coast and uplands along rivers and streams from storms and erosion (slow velocity of flood waters)
- Provide fish and wildlife habitat, critical for ecosystem health, moderate water temperatures, provide oxygen for aquatic species
- Support the economy (recreation tourism, etc.)

Vegetated Buffers (Diverse Native Species)

- Protect homes, businesses, farmlands --- DE economy
- Trees are critically important to healthy, naturally-functioning buffers
- Trees, shrubs, grasses, wetland plants all process and store carbon AND pollutants (nitrogen, metals, bacteria) and runoff from roads, developments, farmlands, etc.)
- Reduce flow velocities, eliminate or reduce erosion and land-loss
- Protect groundwater AND OUR drinking water sources
- Bind up bacteria keeping our waters healthy and safe
- Cool streams, moderate temperatures (reduce unnatural spikes)

Dead Trees – Critical for Ecosystem Health



- Limbs, trunks, & branches devoid of life are just as important to the forest ecosystem as healthy/living trees
- Play a vital role in the lifecycles of hundreds of species of wildlife, providing a place to hide, nest, rest, eat and grow
- Many species of fungi grow only on dead wood, breaking it down and returning important nutrients to the soil
- Provide wildlife habitat, cycling nutrients, aiding plant regeneration, decreasing erosion, and influencing drainage and soil moisture and carbon storage, among other values

Can't Have a Healthy Forest or Vegetated Buffer Without Dead Trees

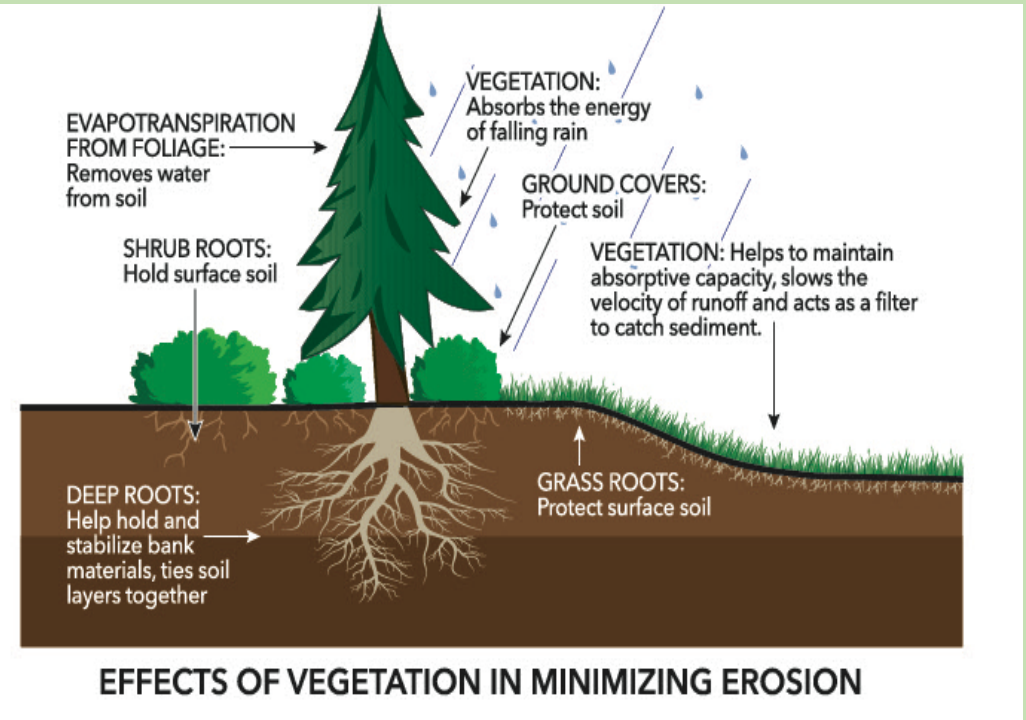
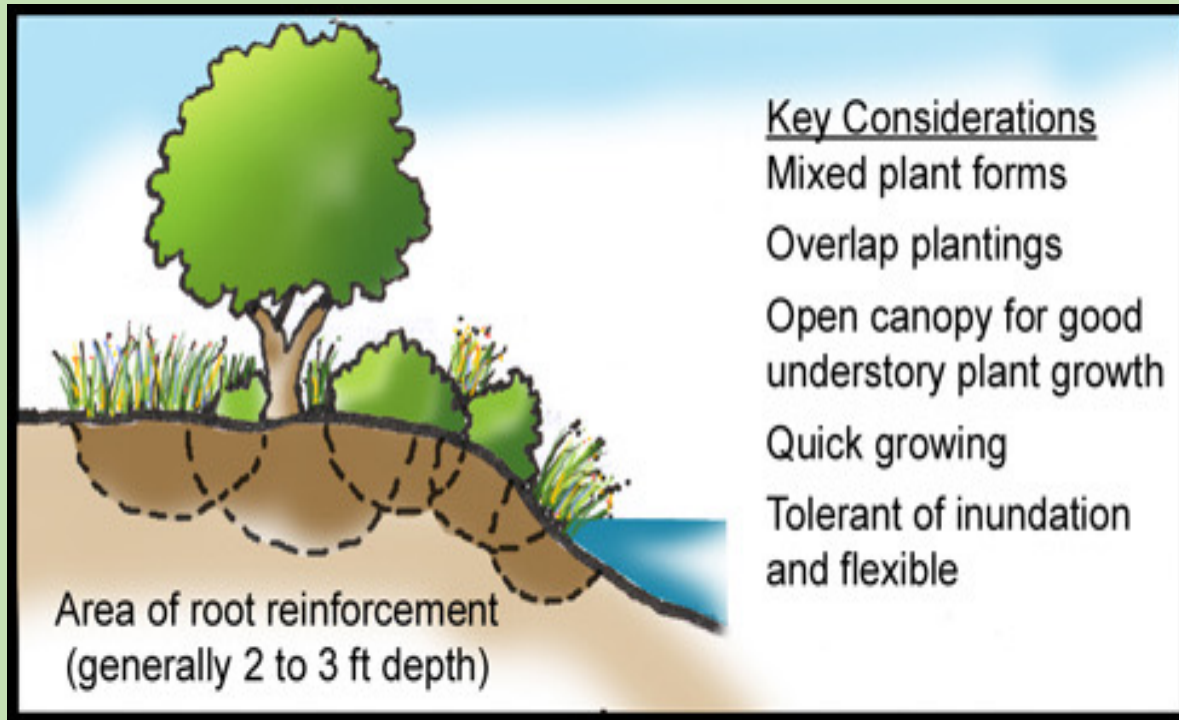
- Scientists Say: Old perceptions about dead trees being ecologically unimportant are common in our society
- While some people think dead trees are unsightly, simply removing them without applying science-based forest and habitat management principles is an ecological mistake



Birds, Bats & Fungi Depend Upon Dead Trees



Trees Minimize Erosion, Especially in Buffers



Trees & Bank Stabilization (Property Protection, Homes, Businesses, Farmlands)

- Trees **reduce stormwater runoff by intercepting falling rain** in their leafy canopies, slowing the force of rain that falls to the ground. ... Tree root systems help reduce erosion by holding soil in place. Even after being cut, the roots attached to the stump help stabilize soil for



New
Subdivisions
with
Inadequate
Buffers and
Impervious
Surfaces
(roads,
driveways)



Loss and Degradation of Buffers Contribute to Fish Kills (record number in 20212)



Salt Pond Development & Loss of Buffer





Vegetated Buffer Loss & Streambank Erosion in DE

Buffers MUST Be Preserved and Protected (sometimes expanded)

- Buffers are very location specific and must be preserved, protected, and sometimes expanded --- destroying/degrading a buffer at one location and placing or expanding a buffer at another location is not supported by science, doesn't work, simply results in cumulative losses
- Natural, vegetated buffers developed over hundreds or thousands of years, are complex mosaics on landscapes with unique hydrogeomorphic regimes and climate
- Federal government and many States require functional assessments and replacement according to lost functions, simply using acres or linear feet is inadequate and NOT supported by science

Legacy Sediments - Post-Settlement Alluvium, Human-Induced Erosion



Performance Criteria for Buffers

- Functions must be identified, described, and replaced
- Species mix should mirror natural, undisturbed condition with dominants and sub-dominant ratios verified
- No invasive species, and a control plan in place should they appear
- Federal government requires a 10 to 1 loss vs. protection or preservation ratio (Section G results in overall losses)
- Trade-off buffers must be monitored, penalties for non-compliance
- **FAR EASIER TO ELIMINATE SECTION G, REQUIRE 100-300' BUFFERS**

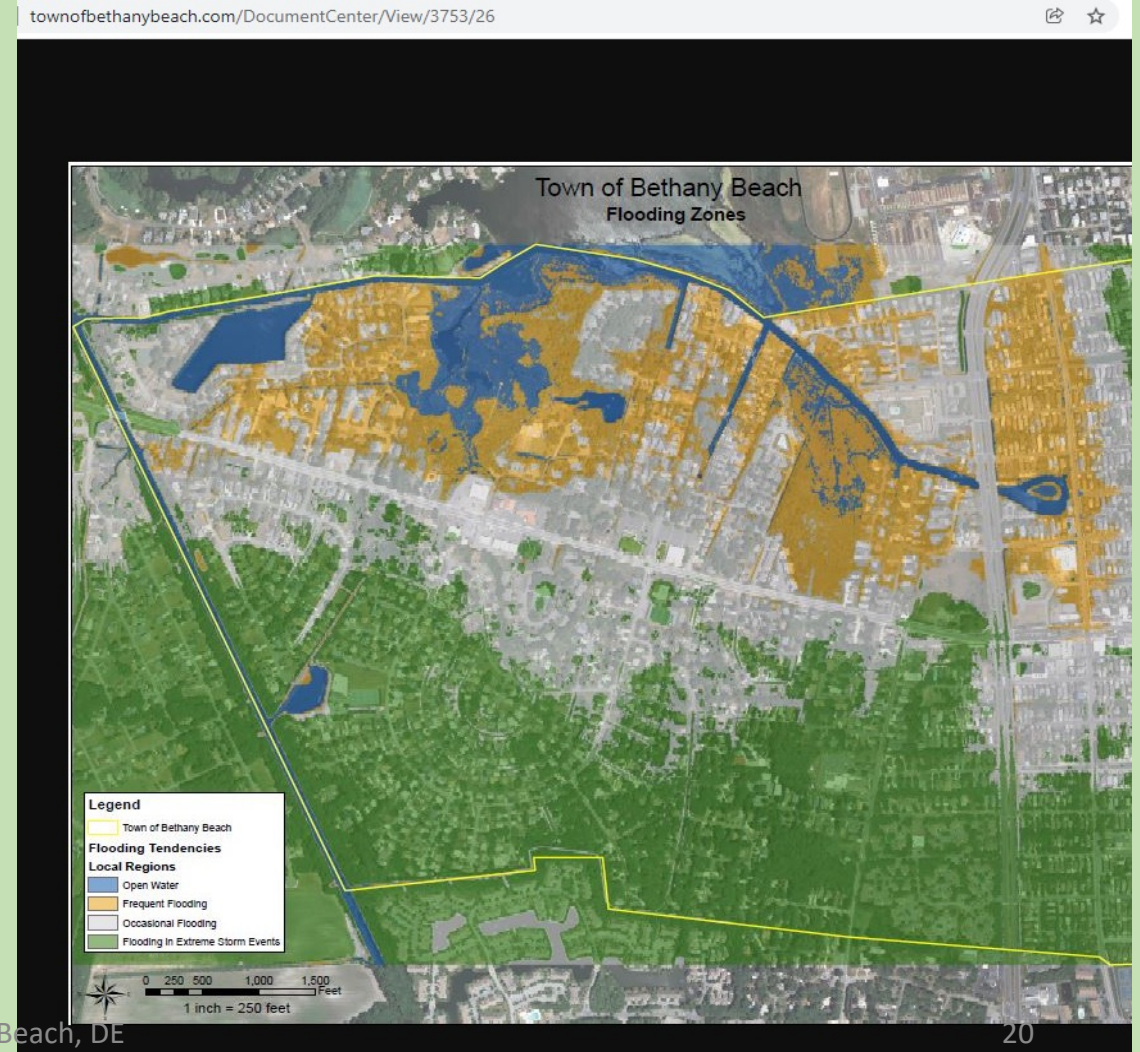
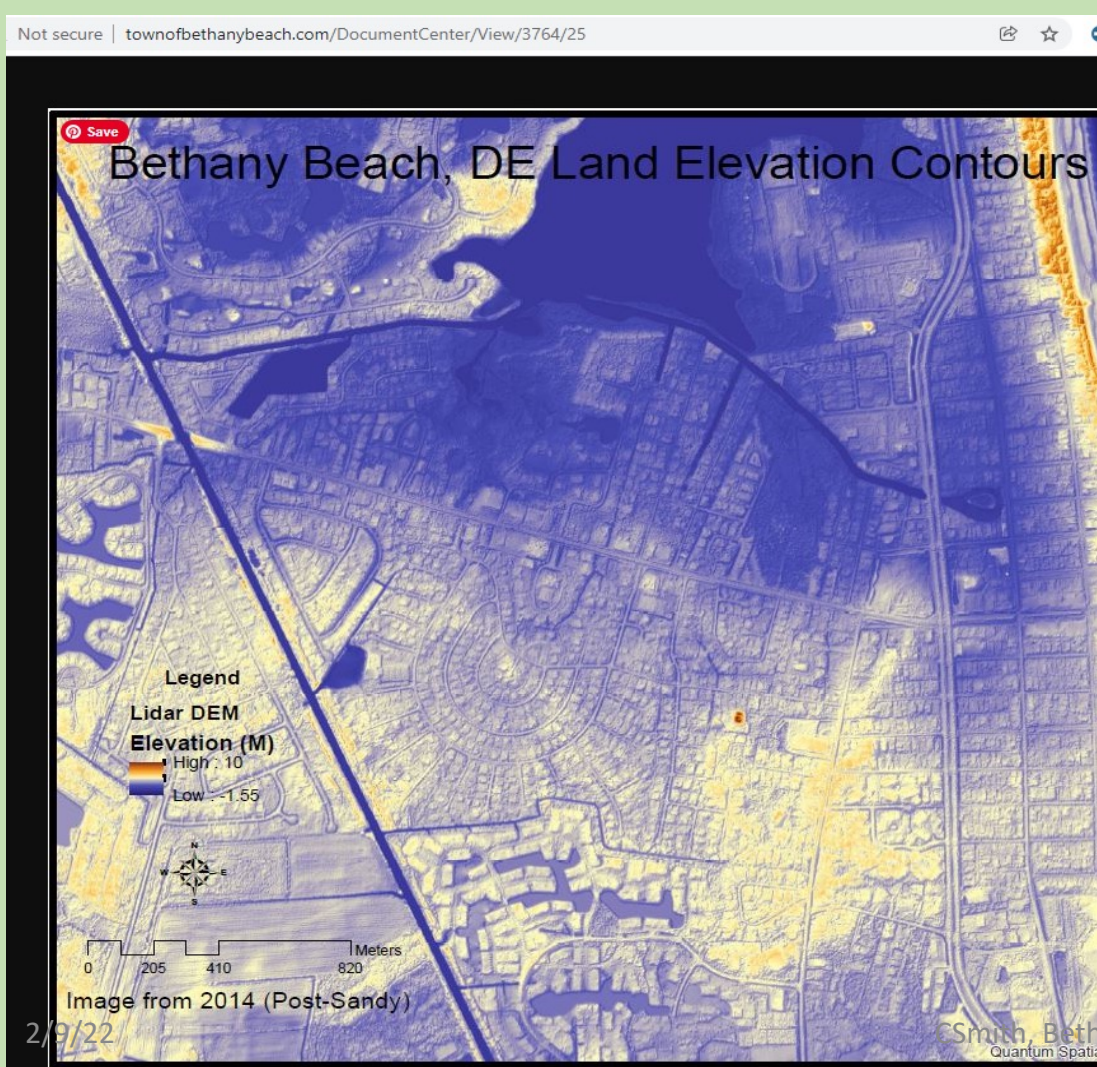
Why Remove Section G?

- Allows removal of trees which are a critical part of a buffer mosaic
- Allows widths of buffers to be cut in half, is irresponsible, environmentally egregious, and contrary to the public good
- Allows buffers to be reduced or eliminated in exchange for protecting or restoring similar areas far from the development area is contrary to common sense and science; buffers are location specific, so protecting a buffer somewhere else does no good for the affected location
- Section G will result in serious cumulative losses of buffer functions in the County, seriously degrading our environmental health

Implement the Buffer Ordinance Without Section G Because...

- Sussex County and the WGWB have made significant progress revising and updating the Buffer Ordinance, balancing economic and environmental considerations
- Section G counters all of the good in the rest of the ordinance, and is a major step backwards, while neighboring jurisdictions are more protective
- Section G is counter to current science and economics, and bad for our environmental health
- Vegetated buffers, using native species, protect life, property, the economy, and the quality-of-life characteristics we love about DE
- **Actions we take now, in this buffer ordinance, will either protect or destroy our children's and grandchildren's environmental inheritance!**

Bethany Beach Contour and Flood Zone Maps



38685 Fred Hudson Road, Bethany Beach, DE





Breakwater
Beach
Development
Just North of
Bethany
Beach on Rte.
1

Recommendation for SCC Consideration

- **Eliminate Section G, pass the Buffer Ordinance Without Section G**
- Section G not developed and discussed by WBWG=controversial text
- Vegetated buffers are critically important to OUR economic, environmental, social, and cultural health, Section G destroys them
- Vegetated buffers protect and improve farmland and residential developments, Section G destroys them
- Section G is inconsistent with Federal, State, & Local government trends to increase the preservation and protection of buffers
- **Buffers are an ecological and economic insurance policy for our children and grandchildren**

QUESTIONS?

Downtown Bethany Beach & Wiegand LN in Bethany Beach Near Loop Canal



Selected References

- The Economic Value of Riparian Buffers in the Delaware Basin
<https://www.delawariverkeeper.org/sites/default/files/Riparian%20Benefits%20ECONW%200818.pdf>
- Riparian Areas: Functions and Strategies for Management (2002), The National Academies of Sciences, Engineering, Medicine,
<http://nap.edu/10327>
- Green Infrastructure Primer: A Delaware Guide to Using Natural Systems in Urban, Rural, and Coastal Settings; DNREC;
[http://www.dnrec.delaware.gov/GI/Documents/Green%20Infrastructure/Green Infra Primer2016 FINAL%20web%20version.pdf](http://www.dnrec.delaware.gov/GI/Documents/Green%20Infrastructure/Green%20Infra%20Primer2016_FINAL%20web%20version.pdf)

Selected References

- The Economic Value of Riparian Buffers, American Rivers, March 2016, https://www.americanrivers.org/wp-content/uploads/2016/05/AmericanRivers_EconomicValueRiparianBuffers-2016.pdf